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ABSTRACT

The purpose of this review is to examine findings concerning the effects of day care on psychosocial and cognitive development. Studies are grouped into two broad categories: (1) the effects of day care on the mother-child relationship; and (2) other psychological outcomes. Only a few studies have found evidence that day care negatively affects the mother-child relationship. Variables such as socioeconomic status, age, sex, length of time in care, and the day care construct have only recently been systematically examined. Studies of these variables that could be considered unfavorable to day care frequently present serious methodological weaknesses. The typical study involves an ex post facto comparison of several matched groups. While these studies shed some light on day care effects, the variables and study context are seldom described in sufficient detail to permit strong inferences from the data. Studies of the cognitive effects of day care constitute a major portion of the day care literature. Little evidence has been presented that day care attendance can have a deleterious effect on children's cognitive functioning. In fact, there is evidence to support the opposite view. Of the few studies of day care effects on the cognitive functioning of high risk children, most have demonstrated beneficial results. (Author/RH)

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THE EFFECTS OF DAY CARE

A Review of the Literature

November, 1980

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INTRODUCTION

Each year an increasing number of children are cared for in a day care center or other setting outside the child's home (National Council of Organizations for Children and Youth, 1976). Caldwell (1972) and others have noted that this is largely due to the increasing numbers of mothers entering the work force. For the children involved, day care represents a substantial environmental deviation from home care. Day care children experience multiple caretakers, a more structured day, more peer exposure, and frequent parent-child separation (Meyer, Note 1). Etaugh (1980) has documented the persistent popular opinion that nonmaternal child care is harmful to children. The purpose of this review is to examine the effects of day care on psychosocial and cognitive development.

In evaluating the literature related to the effects of day care there are several areas of research that are relevant. This review will consider research related to both the psychosocial effects of day care and the cognitive effects of day care. The literature related to psychosocial effects has traditionally focused on the area of mother-child relationships, which will be examined first. Following will be a critique of research related to other areas of psychosocial development. This review will end with an analysis of the cognitive effects of day care, including the effects of day care for high risk infants.

Because this review must be limited, the effects of day care on child health are not considered here. Relevant reviews can be found in Kilmer (1979) and Sjølund (1973).

THE PSYCHOSOCIAL EFFECTS OF DAYCARE

Studies of the psychosocial effects of day care can be grouped into two broad categories. The effects of day care on the mother-child relationship, and all other psychosocial outcomes. A heavy emphasis on mother-child relations has been a dominant theme in day care research because many theorists have assumed that daily parent-child separations may lead to effects similar to those of severe maternal deprivation.

Recently, researchers have begun to focus on a broader range of psychosocial outcome measures (e.g. peer interaction and child-adult relations), but there continues to be a strong emphasis on the importance of the mother-child relationship.

The Mother-Child Relationship

One of the earliest and continuing concerns regarding day care effects has been the possible negative influence of mother-child separation. The mother-child bond has traditionally been viewed as critical to child development. The ability to form attachments, to be socialized by parents and other adults, and to form a capacity for trust and confidence are considered the direct result of a successful mother-child relationship (Bowlby, 1969). If the mother-child bond is not adequately formed at an early stage, it has been assumed there would be profound negative consequences for the child's psychosocial development. Spitz (1945), Goldfarb (1943), and Bowlby (1953) each studied maternal deprivation under different circumstance but with similar negative conclusions.

Since these early studies there has been a tendency to equate maternal separation with maternal deprivation. Despite the fact that few day care settings resemble the extreme deprivation of the studies mentioned above, there has been little interest until recently in defending day care. Casler (1961) and Yarrow (1964) were among the early writers to point that the day care environment need not always be associated with the consequences of severe maternal deprivation. They also noted that many children who do experience severe maternal deprivation recover with time. These writers suggested that maternal deprivation, per se, may not be the single most critical variable in predicting negative psychosocial outcomes. The quality of substitute care that is provided, and whether, in fact, some type of sensory, cognitive, or emotional deprivation has occurred are far better predictors of negative outcomes. For example, a study by Rheingold (1960) indicated that children in institutions receive less visual and verbal stimulation although they do not spend more time alone than home reared children

The gradual acknowledgement that day care may not be the equivalent of maternal deprivation, although maternal separation surely accompanies day care, has caused a refocusing of questions regarding the effects of day care on the mother-child bond. The primary questions today have become:

> Does having an alternative caretaker a large portion of the time have a negative influence on the parent-child relationship?

Do repeated daily separations from the mother have any negative effect on the child if high quality substitute care is provided?

Table 2.1 provides an overview of recent research on the effects of day care on the mother-child relationship. A review of research conducted prior to 1976 can be found in Ricciutti (Note 2).

One of the early studies of maternal attachment was conducted by Caldwell et al. (1970) comparing 30 month old home care children to a matched group of children who had been attending a day care program at Syracuse University for an average of nineteen months. This early study is typical of the day care literature in several respects. The total sample size was small (N=41) and the children were described as "disadvantaged". Social class was not clearly defined and the mean IQ scores at the time of data collection were average (the matched groups were within two points of each other). Most typical of later studies was the fact that the day care program was conducted in a university setting and specifically designed to provide "critical environmental experiences" to the children.

Caldwell et al. found no differences in maternal attachment between the home and day care groups that could be attributed to type of care. They concluded that child care can vary tremendously before negative consequences will occur. Day care should be viewed, they felt, not as institutional care, but as a return to extended living arrangements not uncommon prior to the era of the nuclear family.

Table 2.1. Day Care Effects on the Mother-Child Relationship

Author	Date	Sample Size	Age Level	Results/Comments
Blanchard and Main	1979	21	12 to 25 months	Avoidance of a stranger was negatively related to time in day care (opposite finding from Blehar)
Blehar	1974	20	24 to 36 months	3 year olds exhibited 'anxious, ambivalent' and 2 year olds a 'detached' relationship with their mother in an Ainsworth strange situation if they had been in day care
Brookhart and Hock	1976	15	11 months	No difference in maternal attachment for day care and home group, sex X type of care interaction
Caldwell, Wright, Honig and Tannenbaum	1970	41	30 months	Syracuse Program, no differences found between home and day care groups
Cochran	1977	120	6 months to 6 years	Few differences found between home and day care children on a number of measures of child-caregiver interaction
Cornelius and Denny	1975	64	4 & 5 years	Sex X type of care interaction, No differences in proximity seeking and attention seeking measures of dependency in Ainsworth's situation
Doyle	1975	24	5 to 30 months	No differences found in response to Ainsworth situation
Farran and Ramey	1977			(see Ramey and Farran, 1976)

Table 2.1. Day Care Effects on the Mother-Child Relationship

Author	Date	Sample Size	Age Level	Results/Comments
Kagan, Kearsley and Zelazo	1978	160	3 to 29 months	No difference day vs. home care, SES X care interaction for Chinese sample
Keister (Note 5)	1970	24	3 to 48 months	Day care group had faster development as measured by the Preschool Attainment Scale and the Vineland, day care also more willing to separate
Moskowitz and Schwarz	1977	24	42 months	Day care children significantly more distressed by mother leaving in strange situation (opposite of Blehar)
Portnoy and Simmons	1978	35	3½ to 4 years	No differences in attachment patterns among home, day care, and family day care children; some sex differences noted
Ragozin (Note 3)	1975	28	17 to 38 months	Day care children engaged in less give and take with a stranger, no differences on other variables
Ramey and Farran (Note 6)	1976	23	9 to 31 months	Impact of day care on maternal attachment less important than the mother's behavior and relationship with the child
Ramey and Mills	1977	15	3½ to 9 months	High risk day care infants vocalized more and showed more interactive behavior with their mothers than home group

Table 2.1. Day Care Effects on the Mother-Child Relationship

Author	Date	Sample Size	Age Level	Results/Comments
Riccuitti	1974	9 & home-reared controls	12½ months	Day care group showed significantly more negative reactions to being left alone with a stranger
Ricciuti and Poresky (Note 7)	1973	10	4 to 12 months	The presence of a stable, familiar caregiver lessens problems with separation from mother
Willis and Ricciuti	1974	10	4 to 15 months	Few distress reactions were noted when parents left their child daily, reactions were greater after nine months

This study highlighted the importance of considering other maternal and family variables and their possible interaction with type of care. For example, an association was found between strength of the child's attachment and both maternal stimulation and the child's developmental level.

Caldwell et al. found no differences in maternal attachment in day care and home reared infants. However, this finding did seem contradictory to the maternal deprivation literature and a number of investigation continued to scrutinize the effects of day care on mother-child relationships.

Many, perhaps most, of the mother-child relationship research has used variations on the "strange situation" experimental procedure described by Ainsworth and Wittig (1969) and Ainsworth and Bell (1970). This procedure involves having a mother, child and stranger together in a room. The child's behavior is recorded during several types of episodes. For example, the child is observed while the mother leaves the room. The stranger attempts to comfort the child if the child becomes distressed. The child's behavior is rated periodically for the amount of crying, proximity or avoidance of the stranger and searching for the mother. The child's behavior is also observed during reunion with the mother. Ainsworth, Bell, and Stayton (1971) described various child strategies and reunion behaviors.

Following both the terminology and experimental procedures defined by Ainsworth and her associates, Blehar (1974) conducted a study which demonstrated "qualitative disturbances" in day care

children's ability to separate from their mothers. Comparing 40 two and three year old children who had attended day care for about five months with a matched group that were home reared, Blehar characterized the younger group, when separated from their mother, as "detached" in their relationship with a stranger, and the older children as resistant, avoiding the stranger. Belsky and Steinberg (1978) have critiqued both the strange situation procedure and Blehar's findings.

Blehar recommended that future research focus on possible interactions between children's experiences prior to day care and their reaction to day care. Blehar also noted that, whether or not short term adverse effects are supported by research, long term studies should be conducted to determine the cumulative effects and/or "sleeper" effects of day care.

The contrast between the findings of Caldwell et al. (1970) and Blehar's study has stimulated a great deal of research on possible day care effects on the mother-child relationship. Most of these studies have failed to replicate the negative findings of Blehar.

In a study designed to examine differences between home rearing and day care on the behavior of 30 ten and twelve month old infants, Brookhart and Hock (1976) found no main effects attributable to day care. Although there were no effects due to the rearing condition (home vs. day care), a significant rearing condition by sex interaction was found. This implies that boys and girls may respond differentially to the day care experience.

Clear differences were found between the behavior of infants in a home versus a laboratory setting, casting some doubt on the ecological validity of the strange situation paradigm. Brookhart and Hock stated that day care and home rearing, as globally defined variables, do not affect infant social behavior or the mother-child bond. They recommend that future research examine contexual variables in greater detail than has been done in the past.

Kagan, Kearsley, and Zelazo (1978), in their book Infancy, report the results of their infant studies, including early signs of SES-related effect on cognitive development and cross-cultural comparisons of infant cognitive development. Kagan et al. also report the results of their study of thirty-two pairs of children matched for social class, ethnicity, and sex. The day care children, who had been enrolled in a high quality center from three and a half to thirty months, exhibited no significant differences from home reared children in their crying behavior on separation. Kagan speculated that separation anxiety in children is highly dependent on developmental level and is probably not an appropriate variable for studying the child's ability to form attachments. Kagan's experimental situation, however, differed from the strange situation procedure in that no stranger was introduced. This factor probably decreased the amount of anxiety experienced by the child.

Portnoy and Simmons (1978) examined the attachment behavior of thirty-five children ages three and a half to four years old.

The children were observed in several strange situation episodes. The children were classified as reared exclusively at home, until age three after which they were enrolled in full time day care, and children enrolled in family day care at age one and in group center at age three. No significant differences were found between children raised at home and the two day care conditions. Some sex differences were noted among low SES children who attended day care. The authors also reported that the sex differences that were uncovered tended to indicate that the strange situation procedure may not have been appropriate for this age group.

In a study of children who had been enrolled in day care for an average of twelve months, Blanchard and Main (1979) did not support the findings of Blehar. Twenty-one children, ranging in age from twelve to twenty-five months, were observed during their reunions with their mothers and rated on the Ainsworth scale for avoidance in the strange situation. Avoidance was negatively related to months in day care, a finding that suggests Blehar's results were due to the shorter time her subjects had spent in day care. In addition, more time in day care was associated with better social-emotional adjustment.

Many other studies have not supported Blehar's findings of a negative effect on the mother-child relationship. These include Moskowitz, Schwarz, and Corsini (1977), Doyle (1975), Roopnarine and Lamb (1978), Ragozin (Note 3), Cornelius and

Denny (1975), Saunders (Note 4), and Farran and Ramey (1977).

A limited number of studies have supported Blehar's finding that day care experience impairs children's maternal attachment. Several studies by Henry Ricciuti at Cornel University can be interpreted in favor of home reared children, however the studies focus on the child's adjustment to day care rather than the effects of day care. Ricciuti (1974) studied children's reactions to being left by their mothers in a strange room. Although Riccuiti acknowledged that day care children cried more on separation from their mothers, he noted that daily separation to day care, with a familiar caregiver evoked much less crying than being left with a stranger. Riccuiti's work should be regarded more as research on children's reactions to brief separation rather than studies of day care effects.

Cochran (1977) and Ragozin (Note 3) only found a small number of differences in favor of home care from among many dependent variables, clearly pointing out that the similarities between groups are far greater than observed differences in attachment.

Summary of Day Care Effects on the Mother-Child Relationship.

In summary, only a few studies have found evidence that day care, as a global variable, negatively effects the mother-child relationship. The overwhelming majority of studies have detected no differences. For this reason, studies of day care effects have begun focusing on a wider range of psychosocial

variables, and this research is considered in the next section.

A recent article by Stroufe and Waters (1977) has described many of the limitations inherent in using "attachment" as a dependent measure in studies of day care effects. Portnoy and Simmons (1978) and Ricciuti (Note 2) have both criticized the use of the strange situation paradigm to the virtual exclusion of other experimental methodologies.

Day Care Effects on Psychosocial Development

In recent years there has been a noticeable shift in the emphasis of research examining the social/emotional effects of day care. This research is summarized in Table 2.2. Earlier studies focused almost exclusively on the mother-child bond. Today a wider range of social and emotional variables are under study. This new direction in the study of day care effects is beneficial in that researchers are beginning to understand the limitations of the traditional outcome measure (mother-child attachment) and explore other psychosocial variables and other, equally important organizational characteristics that may influence day care effects.

Despite the shift in emphasis of psychosocial studies of day care effects the fundamental question has remained the same: Is day care harmful to children's development? Ironically, one of the early studies to find negative effects was Schwarz, Strickland, and Krolick (1974), who studied children at the Syracuse University day care center. This was the same program for which Caldwell et al. (1970) found no negative effects on maternal attachment several years earlier. Schwarz et al. studied 19 matched pairs of four year olds and found that children in day care since infancy were more verbally and physically aggressive (both with peers and adults) and less cooperative with adults.

Meyer (Note 1) presented the most recent progress report

Table 2.2. Day Care Effects on Other Psychosocial Development

Author	Date	Sample Size	Age Level	Results/Comments
Braun and Calwell	1973	-	-	Day care was not harmful to the social-emotional development of subjects
Cochran	1977	120	½ to 6 years	Swedish population, minimal differences between day care and home reared, differences seemed to be related to variations in the constraints within different settings
Honig, Lally and Mathieson (Note 11)	1979	-	K & 1st grades	Followup indicated day care center graduates had more positive social skills bothe with peers and adults and were more verbally communicative
Kagan, Kearsley and Zelazo	1978	160	3 to 29 months	No differences between day and home care groups, significant care by SES interaction for Chinese subjects
Lippman and Grote (Note 9)	1974	198	1 to 4 years	No differences among day care center, family day care and home care for cooperativeness, reaction to stress, and sex role typing
Macrae and Herbert-Jackson	1976	16	2 years	Day care exhibited better peer relations
McCutcheon and Calhoun	1976	18	5 to 30 months	Children successfully adjust to day care by decreasing their crying, sitting alone, and interacting more with both peers and adults

Table 2.2. Day Care Effects on Other Psychosocial Development

Author	Date	Sample Size	Age level	Results/Comments
Meyer (Note 1)	1979	40	36 to 52 months	Day care children had more positive social peer interaction (especially verbally), and more negative interactions; no differences in interactions with adults
Moore	1975	167	1 year of day care prior to age 5	Only followup study to mid-adolescence; care by sex interaction; day care boys were more peer oriented
Robertson (Note 10)	1978	121	5 & 8 years	Care X SES, care X sex interactions found; day care influenced responsiveness to social reinforcement, imitation, attention seeking and cooperativeness
Rubenstein and Howes	1979	30	18 months	Day care children had more adult-infant play, reciprocal smiling, higher developmental level of play with toys; home care demonstrated more crying, maternal restrictiveness, and verbal response to mother's talking
Schwarz, Krolick and Strickland	1973,1974	-	42 to 46 months	No major differences in '74 study; day care less cooperative with adults, more active, more aggressive in '74 study

on the children in the Syracuse University day care program. Meyer analyzed 20 children in day care since the age of six months, and a matched comparison group. The original day care sample was selected as a "high risk" group. As in the Schwarz et al. study the day care children exhibited more physical and verbal aggressiveness, more activity and less cooperation with adults.

Meyer's interpretation of these findings are similar to Bronfenbrenner's (Note 8) theoretical speculations about the effects of day care. Meyer notes that day care children receive more stimulation and more peer interaction than their home reared counterparts. This results in more interactive activity of every type, both positive and negative. Meyer's study indicated that day care children were more interactive and he provides some evidence that the day care children had elevated positive interactions as well as negative interactions.

These findings raise several questions about the psychosocial effects of day care. How can it be determined whether observed differences are positive or negative? It seems possible to interpret increased levels of both positive and negative interactions either way. To what extent are variables such as peer interaction desirable? For example, peer interaction would seem to be desirable until it becomes so intense that it negatively impacts adult socialization. It can be readily seen that the issues become complex when maternal attachment is no longer the sole focus of psychosocial effect research.

Lippman and Grote (Note 9) compared 198 triplets (matched according to sex, race, and number of parents in the home) representing home care, family day care, and day care centers. The out-of-home care groups averaged two years of day care. Minimal differences were observed among the children in sex typing, impulse control, parental relationship, and cooperation. Day care children, in contrast to the home care group, appeared to have a more realistic assessment of their own skills. In contrast, home reared children were more likely to take turns in a game requiring cooperation than children in day care. Lippman and Grote do not regard their findings as evidence of negative day care effects, but urge that the simple contrast between day and home care be re-examined.

Moore (1975) conducted the only longitudinal study through mid-adolescence of children who received either 'exclusive mothering' or day care for at least one year prior to the age of five. Because the sample size was relatively large (N=167), Moore was able to analyze several subpopulations separately, e.g. boys, girls, and children with both parents living at home.

Moore's dependent variables were derived from mother interviews as well as various psychological tests. Moore found a type of care X sex interaction, noting that prediction for boys was considerably better than for girls. Children who receive exclusive mothering tend toward self-control and school achievement, indicating that they had internalized adult standards. Children in substitute care tended to be more peer-oriented, active, and

aggressive. Moore's findings are interesting although the psychological interpretation of his findings in this ex-post facto study seem tenuous at times.

Moore's study is significant in at least two respects. First, in contrast to most studies of high quality centers, a variety of day care centers were included in the study. This permits some generalization of Moore's results to the "average" day care setting. Moore speculates that optimal child care arrangements could well include part time substitute care after the age of three. Secondly, this study has followed children to mid-adolescence. The author states that prediction from type of care to outcomes during adolescence are superior to short and midrange predictions, a finding supportive of a possible sleeper effect.

Studying 8 matched pairs of two year olds, Macrae and Herbert-Jackson (1976) examined the same behavioral traits that Schwarz et al. (1974)(discussed earlier) had examined. Macrae and Herbert-Jackson's findings were essentially in favor of day care, exactly the opposite of the negative findings of Schwarz et al. The day care group was significantly different from the home care group in their ability to get along with peers, problem solving and 'planfulness'.

What can account for the essentially opposite findings of the Schwarz et al. and the Macrae and Herbert-Jackson studies? Several important variables may play a part in these findings. First, the ages of the two groups differed. The children in the

Macrae and Herbert-Jackson study averaged two years younger than in the other study (average age of two as opposed to four). Second, the home-reared group in the Macrae and Herbert-Jackson study had actually been in day care for only one to six months (no average length of time in day care was reported). This group could possibly be more appropriately considered a 'transitional' group rather than home reared. Finally, Macrae and Herbert-Jackson point out that different programs may produce different results, and that negative findings in one day care setting should not be generalized to other settings without empirical verification.

Robertson (Note 10) studied the effects of day care center attendance on IQ, school achievement, and several measures of social behavior and motivation. Type of child care did not produce a significant main effect on any of eleven dependent measures, however it interacted with other variables in several ways. Daycare interacted with SES to influence the children's responsiveness to adults, with lower SES day care children less responsive to adults than others. Type of care did not effect the school achievement of lower SES subjects while home reared children had relatively high achievement ratings. Robertson suggests that numerous studies remain to be done to define appropriate constructs for studying day care effects. She also recommends more long term studies that analyze specific attributes of day care centers as well as consideration of child characteristics such as SES related variables.

In a study of two matched groups of eighteen month old infants, Rubenstein and Howes (1979) found several differences in social and play behavior favorable to day care. The day care children engaged in more reciprocal smiling and played with adults more frequently than the home reared sample. The author noted that there seemed to be no negative effects due to daily mother-child separation and that peers played an important role for day care infants in stimulating play and positive affect.

The Rubenstein and Howes study focused on community based day care rather than high quality (often university based) day care.

In accounting for the differences between the home and day care infants, Rubenstein and Howes rely heavily on their observations of adult and peer interaction among day care infants. In a separate ad hoc analysis the authors compared day care children with home reared children who had frequent interaction with other peers at home, and found many of the day care/home differences disappeared. Also noted was that the contingencies governing peer and caregiver interaction in day care may differ substantially from home care. Rubenstein and Howes suggest that child care in a social setting may be more pleasurable than for an isolated parent.

The favorable results of the Rubenstein and Howes study should be interpreted cautiously. The total sample size of thirty is small and the average length of time in day care was only 4.7 months. However, even if the results are accepted several

important questions remain. How can the separate effects of the home and the center be differentiated for day care children. Are the results of greater peer influence always positive? And, what are the lasting effects of differences between day and home care?

Cummings (1980) studied the effect of environmental context on caregiver preference, that is, whether the laboratory or day care center setting would affect a child's preference for their caregiver. In the laboratory setting children showed no preferences for any caretaker other than their mothers. This study certainly supports the critical importance of studying day care effects in an ecologically valid setting. In addition, Cummings's study is an example of current efforts to move beyond the study of global day care effects and isolate specific environmental factors that influence the day care child. One of these factors, caregiver stability, has received support in this study. Numerous other factors, including others that can be influenced at the policy making and regulatory levels, remain to be analyzed.

Summary of Psychosocial Effects of Day Care.

The literature related to the psychosocial effects of day care is complex and often contradictory. While researchers should be commended for beginning to focus on a wider range of dependent variables (other than maternal attachment), it has been only very recently that convariates (such as SES, age, sex, and length

of time in care) and the day care construct have begun to be systematically examined.

The studies that could be considered unfavorable to day care included Schwarz et al. (1974), Meyer (Note 1), Rubenstein and Howes (1979), Moore (1964), Kaph, Thomas, Chess and Korn (1974), and Lippman and Grote (Note 9). Most other studies report no differences on findings for children attending day care. These studies include Kagan et al.(1978), Cornelius and Denny (1975), Moore (1975), McCutcheon and Calhoun (1976), and others.

The methodological weaknesses of many of the above studies are serious. There have been very few controlled studies, and those have often been discredited because of their lack of ecological validity. The typical study involves an ex post facto comparison of several matched groups. While these studies shed some light on day care effects, the variables and study context are seldom described in sufficient detail to permit strong inferences from the data.

Moore's (1975) long term follow-up study is the only study with positive effects that utilized average or typical day care centers. The majority of studies, including those finding negative effects, examined children in high quality day care.

The variables of greatest interest to researchers have been peer and adult interaction. These have usually been defined in terms of verbal or physical cooperation or aggression. A number of other variables have been examined that should help future efforts to define the psychological environment of day care.

The studies of psychosocial effects of day care have also given rise to studies that have a broader perspective than a strict focus on the child's response to day care. Important issues such as the reasons for type of care selection, and the effects of day care on parents, siblings, and the community still need to be examined. Fowler and Khan (Note 12) and Ramey and Mills (1974) found that children's day care attendance influences the type of parental stimulation they receive at home. Steinberg and Green (Note 13) compared families using different types of child care and found no differences in SES, father absence, or parental age. Not surprisingly, the Pennsylvania Day Care Study (Elliot, 1973) reported that maternal employment and income was greater for day care children than home reared children. Several studies have also shown that satisfaction with child care is associated with marital and employment satisfaction (Meyers, Note 1; Harrell and Ridley, 1975).

COGNITIVE EFFECTS OF DAY CARE

Studies of the cognitive effects of day care constitute a major portion of the day care literature. There has been concern that day care centers, like large institutions, may provide decreased cognitive stimulation. Others have speculated that, particularly for disadvantaged children, a day care setting may provide greater stimulation than a single care-taker at home would provide. Research related to the cognitve effects of day care is summarized in table 2.3.

The methodological problems involved in studying cognitive effects of day care are similar to many studies that use standardized test results as dependent measures. The content of the tests is in no way tied to the curriculum of the center. While this may be acceptable or even desirable in a large scale effort to determine total effects, these tests are extremely limited in their sensitivity to specific aspects of the day care curriculum, as the experiences of Head Start program evaluators have clearly indicated (see Zigler and Trickett, 1978; Zigler and Valentine, 1979).

Two studies, Peaslee (Note 14) and Cochran (1977), have reported negative effects on cognitive functioning for children in day care, and Cochran discounts his findings as only one significant difference among numerous findings of no difference between home and day care children.

Peaslee (Note 14) examined the effects of home and day care on the competence of preschoolers. Building on the definition

Table 2.3. Day Care Effects on Cognitive Development

Author	Date	Sample Size	Age Level	Results/Comments
Caldwell, Wright, Honig and Tannenbaum	1970	40	30 months	Cognitive gains for children enrolled in group care six months or more as measured by the Stanford-Binet
Cochran	1977	120	½ to 6 years	No differences home vs day care on the Griffiths Mental Development Scale
Doyle	1975	24	5 to 30 months	No differences home vs center care (for an average of 7 months) on the Cattell Infant Intelligence Scale
Fowler and Khan (Note 12)	1974	39	5 to 70 months	Griffiths, Binet measures showed 'enriched' day care can be beneficial; no regression apparent at 70 months, advantaged children benefitted more from the program than disadvantaged children
Garber, et al	1976	20	½ to 6 years	Low income, black children ('high risk') showed substantial gains on the Binet after 22 months
Kagan, et al	1978	116	3 to 29 months	Bayley and other measures; no substantial differences, eveidence of positive day care effect when it enhances the child's environment
Keister (Note 5)	1970	24	3 to 48 months	No negative effects of high quality day care, University of North Carolina Project
Lally (Note 17)	1974	129	36 months	Syracuse Children's Center, Binets of day care children were better than matched control group of low income/ education non-clients

Table 2.3. Day Care Effects on Cognitive Development

Author	Date	Sample Size	Age Level	Results/Comments
Macrae and Herbert-Jackson	1976	16	2 years	Day care group performed better than home group in problem solving, ability to abstract and planfulness
Peaslee (Note 14)	1976	50	2 years	Home reared infants more competent than day care; measures of abstract ability, language ability, social competency, discriminative ability, and mental development (Bayley)
Ramey and Mills	1977	60	3½ to 9½ months	High risk day care infants more closely resembled low risk than high risk home reared infants in Bayley motor development, vocalizations, visual discriminations
Ramey and Smith (Note 18)	1976	-	1½ to 18 months	Day care children same at 7 months on Bayley, 16 points higher at 18 months; day care required fewer trials to learn two choice visual discrimination task
Robertson (Note 10)	1978	121	followup at 6 & 9 years	Care X SES interaction, middle SES home care had higher academic achievement
Robinson and Robinson	1971	31	1 to 48 months	High quality day care enhanced Bayley (mental and motor), language, WPSSI, and Frostig performance
Taylor (Note 16)	1975	75	4 years	No differences between home, part time and full time center care

Table 2.3. Day Care Effects on Cognitive Development

Author	Date	Sample Size	Age Level	Results/Comments
Willis and Ricciuti	1974	10	4 to 15 months	No harmful effects found of high quality day care on cognitive development
Wirett, Fuchs, Moffatt and Nerviano	1977	124	3 to 5½ years	SES X care interaction, no day care vs home care differences on Peabody Picture Vocabulary Test or Illinois Test of Psycholinguistic Abilities, mixed care group exhibited the highest scores

of competence presented by White, Watts, Barnett, Kaban, Marmor, and Shapiro (1973), Peaslee hypothesized that day care children would score lower on tests that measured aspects of competence: ability to abstract, language ability, social competence, discriminative ability and mental development. In her matched sample of 50 two year olds the home reared children were significantly more competent than day care infants. This study, focusing on the effects of day care on children who had been enrolled at less than eight weeks of age is important because the day care centers that were included were not university based and could be considered average day care settings. Unfortunately, the author used a t test to analyze the data, increasing the probability of finding significant differences when none existed. This may not have been a problem as the home reared group scored better on every dependent measure, however this does cast some doubt on the methodology.

Cochran (1977) studied the social and cognitive development of Swedish children who were raised in their own homes, a family day care setting, or a day care center. The subjects were twelve, fifteen, and eighteen month old children who were matched for sex, family size, SES and the location of their home. A variety of observational and developmental data were collected.

Few differences existed among the groups with regard to their common experiences and environmental surroundings. Cochran found that day care children tend to be less involved in exploring their surroundings and seemed less involved in cognitive-verbal situations with adults. Cochran stressed that the

similarities across rearing conditions were much greater than the differences and, as noted above, tended to disregard the negative findings for day care.

The studies reporting beneficial effects of day care on cognitive development include Robinson and Robinson (1971, Vroegh (Note 15), and Winett, Fuchs, Moffatt, and Nervianc (1977). In addition, The overwhelming majority of studies with typical children detected no cognitive differences between day care and matched controls (Caldwell et al., 1970; Kagan et al., 1978; and Moore, 1975; Doyle, 1975; Keister, Note 5; and Taylor, Note 16).

One of the early studies to suggest the possible positive cognitive effects of day care was done by Robinson and Robinson (1971), at the University of North Carolina at Chapel Hill. The Bayley scales were administered to 31 infants enrolled in the University's comprehensive day care center. The results indicated that high quality day care may produce beneficial results both for normal and disadvantaged children. Robinson and Robinson stated that the benefits of quality day care seemed to focus on verbal rather than motoric or other skills. The authors raise several questions about beneficial effects of day care: Will positive effects be persistent or transitory? What are the elements within a day care program that provide beneficial effects? And, could these critical elements be packaged and delivered more efficiently to children?

Winett, Fuchs, Moffatt and Nerviano (1977) conducted a relatively large (N=124) cross-sectional study of day care

center, home, babysitter and mixed care children. A large number of measures related to the children's cognitive development were made, including standardized tests, behavioral measures, and parent and center indices. The subjects were separately analyzed according to subpopulations defined by such variables as SES, race, birth order, age, and maternal employment.

The mixed care group in this study exhibited both higher SES and higher scores on the cognitive measures. The other groups were similar on most child measures. Maternal employment was associated with child care outside the home, and also with greater paternal involvement. A number of SES differences were found that indicate the importance of considering SES related variables in day care research.

Winett et al. made a number of recommendations for future research in day care. They noted that global measures of day care, such as those employed in their study, are unlikely to help tease out interactions between "family-social types" and child care groups or between child care and outcome measures. Precise variable definition of either family types or child care are difficult because of the heterogenity of family patterns.

Winett et al. also noted the importance of social class as a prime determinant of day care effects. Following Deutsch's (1973) concept that mediating variables associated with poverty must be linked to child outcomes. Winett et al, encourage the

identification, through future research, of factors associated with child care that can help to ameliorate negative outcomes.

Cognitive Effects of Day Care for High Risk Children.

Some of the research that has reported cognitive benefits associated with day care attendance have studied 'high risk' children. High risk may be defined in many ways, but most of these studies are referring to children from very poor families or children whose parents would be classified as mildly retarded. Unfortunately, some of these studies define high risk very generally and this casts some doubt on the actual characteristics of their sample. For example, Meyer (Note 1) describes his sample as high risk, yet both the home and day care groups averaged above 100 on an IQ pretest.

Studies of day care for high risk children are conceptually related to outcome studies for the Head Start program. Positive findings for day care and Head Start programs were scarce until researchers determined which subpopulations and dependent variables were critical for analysis. Robinson and Robinson (1971) were among the first in the day care literature to make this point. They noted that, because of the use of standardized instruments as dependent measures, specific program features could not be associated with specific outcomes. They also raised the question of whether beneficial effects of day care were transitory (i.e. they would 'wash out'), a problem that plagued early Head Start evaluations (see Brown, 1978).

Half of the Robinson and Robinson (1971) sample were described as "disadvantaged", with income data reported that supported the description. The disadvantaged group in this study benefitted more from their day care experience than the other middle class group. Although the 'advantaged' group scored higher on the dependent measures, the disadvantaged group made greater gains.

High risk infants have been studied by Ramey and Mills (1974), who studied three matched groups totaling sixty infants averaging six and a half months old. The dependent variables for this study included both mental and psychomotor scores on the Bayley Scales of Infant Development, maternal attitude measures, and observation of the infant-mother interaction and the home environment.

Ramey and Mills found that the high risk group attending day care did as well as the general population on most measures, and that the home-reared high risk group did less well. The high risk children in day care scored higher than their home-reared counterparts on the psychomotor portion of the Bayley, vocalization and social relationships. Ramey and Mills state that the characteristics of day care programs must be further studied to determine the exact types of social behavior that are facilitated by day care.

Fowler (1972) studied thirty nine infants age two to thirty months including nine disadvantaged children. Using the Bayley Scales, the Stanford-Binet (after two), and interviews, Fowler

found average rises of 20 points in IQ scores. In a follow-up study, Fowler and Khan (Note 12) found no regressions to pre-program levels of functioning, a highly atypical finding.

The New York City Infant Day Care Study (Golden, Rosenbluth, Grossi, Policare, Freeman and Brownlee, 1978) provides the first evidence that 'average' day care may also benefit high-risk children. In a sample of four hundred children from poor families in New York, the day care children performed better than home reared children on the Bayley, Stanford-Binet, and Peabody Picture Vocabulary Test. While the practical significance of an average 7 point difference in IQ scores may be questioned, the New York study is important because it indicates the possible effectiveness of 'modal' rather than 'model' day care centers.

Summary of the Cognitive Effects of Day Care.

Little evidence has been presented that day care attendance can have a deleterious effect on children's cognitive functioning. In fact, there is evidence to support the opposite view. While most studies have reported no differences between middle class day care and home reared children, several studies have shown positive results. Of those studies, only Fowler and Khan (Note 12) have reported follow-up results that did not show a regression or 'washout' effect.

Of the few projects that have studied the effects of day care on the cognitive functioning of high risk children, most

have demonstrated beneficial results. Thus there is evidence that day care, particularly for disadvantaged children, may aid cognitive development.

The effects of day care on cognitive variables other than IQ have been less frequently reported in the literature, and the picture is less clear.

DISCUSSION

Throughout the day care literature evidence for negative effects has appeared only sporatically. While this handful of studies finding harmful effects is a cause for concern, the majority of evidence indicates that day care children do not fare worse than children remaining at home.

Many, perhaps most, studies report no differences between day care and home reared children on psychosocial and cognitive dependent measures. Some studies report beneficial effects of day care on a limited number of dependent measures or with certain types of children. These findings lead to two conclusions:

> Day care, as a global construct, should be used only under certain circumstances. Studies that purport to make generalizations about day care as a whole should include many centers, including centers that are 'average'. There is evidence that day care X sex, day care by SES, and other interactions should be carefully considered.
>
> Studies that occur in only one day care center should describe the program's methods and content in sufficient detail to relate specific features of program content to child outcomes.

The study methods and purposes of the two types of research proposed above are different. Many of the apparent controversies in the day care literature could be resolved if researchers acknowledged the limitations of their study methodology. For example, Schwarz et al (1974) found increased aggressiveness in day care children while Macrae and Herbert Jackson (1975), using similar dependent measures found decreased aggressiveness. Schwarz et al (1974) suggested that day care effects are pro-

gram specific, yet there is insufficient data in either study to determine the specific program features that may produce differential results.

A number of studies have found type of care X SES and type of care X sex interactions, and it is clear that sex and SES differences should be analyzed in future day care studies. Several studies have also noted that children's individual development levels seem to influence day care effects.

Another important drawback of day care studies to date is their failure to consider a wide range of effects in addition to child outcomes. Belsky and Steinberg (1978) have stated that studies of day care effects should consider the effects of day care on the parents, siblings, other family members, the community, business and other populations that may be influenced. The decision to utilize child care services is made in a social context, and that context must be understood before day care effects can be deciphered.

Very few studies to date have included a sufficiently large sample of children and/or centers to draw inferences about total day care effects. Exceptions to this rule are Golden et al (1978), Moore (1975), and Robertson (Note 10). Moreover, the majority of studies have been conducted in university-based, high quality centers. These studies demonstrate what can be done but do not reflect the effects of an average day care center.

With a single exception (Moore, 1975) there are no long term follow-up studies of day care effects. The follow-up studies that have been conducted (e.g. Robertson, Note 10; Fowler and Khan, Note 12; and Meyer, note 1) have been relatively short term follow-ups of not more than three years. Part of the reason for this may be that the advent of large scale day care in the United States has been relatively recent. Two sources of evidence indicate that this is a serious shortcoming.

Moore (1975) reported a follow-up study to mid-adolescence of children in day care prior to age 5 and children cared for exclusively by their mothers until school age. Moore found that, although the selection criteria was type of care before age five, he had better prediction at age fifteen than at younger ages. Moore found a more consistent picture of day care effects in adolescence than at any previous time in the subject's lives. This study provides strong support for the notion that marginal differences and trends in early experience often cannot be observed until adolescence when their ultimate effect on development can be seen.

This hypothesis has also received support in the Head Start evaluation literature. Lazar, Hubbell, Murray, Rosche, and Royce (Note 19) have published the first results of a long term term follow-up of a group of Head Start programs. These programs, which began in the mid-sixties, now have program graduates who are in early adolescence. The programs included in the study were considered exemplary during the late sixties,

and represented a variety of teaching method. However, by the early and mid-seventies program effects had 'washed out' or were only minimal.

The study by Lazar et al. provides evidence that the children have had lasting effects from program participation. Lazar et al have found that program participants had a lower rate of special education in school than matched controls and were less likely to repeat a grade. Although there were no differences in IQ between the groups, attitudinal differences were clear. The graduates of Head Start programs exhibited better attitudes toward school, their peers, and their vocational opportunities.

The studies by Moore (1975) and Lazar et al (Note 19) seem to indicate a strong need for long term follow-up studies of the effects of day care.

The study of day care effects seems to be on the verge of increased sophistication and specificity. It should be possible to conduct prospective and/or cross-sectional ex post facto studies of the long term effects of day care in the near future. In addition, smaller studies should utilize present knowledge to define variables within individual day care settings that will help tie specific program features to child outcomes.

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